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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/565,650

01/24/2006

Noboru Fujiwara

Q92854

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65565 7590 11/10/2008
SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

EXAMINER

CLARK, MAXWELL A

ART UNIT

PAPER NUMBER

2416

MAIL DATE

DELIVERY MODE

11/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/565,650 | Applicant(s) FUJIWARA, NOBORU | |
| | Examiner MAXWELL A. CLARK | Art Unit 2416 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/06; 4/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Drawings

2. The drawings are objected to because the English language must be used for descriptions and letters, except where another alphabet is customarily used, such as the Greek alphabet to indicate angles, wavelengths, and mathematical formulas. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version

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of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figures 12 and 13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claim 1, it is unclear what is meant by the limitation "a transmission management table **in which destination slaves of instruction data are previously allocated** to **each of the base counter values**"

7. Claim 1 recites the limitation "the pre-allocated value". There is insufficient antecedent basis for this limitation in the claim.

8. Regarding claim 2, the phrase "the base cycle counter value **assumed** when the instruction data is received" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

9. Regarding claim 3, the phrase "the instruction data **assumed** when the instruction data is received" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over del Prado Pavon et al. (US 2003/0172179 A1) in view of Aiello et al. (US 7,088,795 B1).

Regarding claim 1, Pavon discloses a master/slave synchronization communication system, comprising: a single master and a single or a plurality of slaves that are based on IEEE1394 (§0006, wherein the invention disclosed by Pavon is described as including 1394 nodes; §0016, wherein performing clock synchronization of clock registers of nodes coupled via a network, which can be a wired or wireless network, includes transmitting from a master node in the network to non -master nodes, i.e. slaves), wherein the master/slave synchronization communication system has a communication period which is set to an integral multiple of a natural period of IEEE1394 communications with the natural period considered as a base cycle (fig. 2a; fig. 2b; §0017, a cycle time value, $a(n)$, associated with the time of detection of the symbol position during transmission, and a sequence number n of the synchronization frame F_i), each of the master and the slaves has a detecting section of a synchronization point being a start timing of the communication period, and a base cycle counter which shows what base cycle number the present cycle is from the synchronization point (fig. 2a; fig. 2b; §0016, a second synchronization frame F_{i+1} including the cycle time $a(n)$ and the sequence number n corresponding to the first synchronization frame; §0017, receiving the transmitted synchronization frame, F_i at

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each non-master node), destination slaves of instruction data are previously allocated to each of the base counter values, and transmits instruction data to each slave every time the base cycle counter is updated based on the transmission (§0028, cycle time registers 16d and 18d provide fields that specify the current time value and a write to the cycle time register initializes the clock hardware to the value contained in the write transaction; §0033, at the i th iteration cycle, a synchronization frame, F_i , is transmitted from the master node 16a which includes the cycle time, $a(n_{i-1})$ and associated sequence number n_{i-1} , saved in the previous iteration cycle; §0034, the master node 16a also saves the sequence number, n_i , of the transmitted frame F_i wherein the sequence number, n_i , transmitted within the synchronization frame is used to associate cycle time values, saved in the non-master nodes, with the corresponding synchronization frame that originated the saved cycle time values), and each of the slaves transmits response data to the master when the pre-allocated value of the base cycle counter is reached (§0017, means for transmitting a next synchronization frame, F_{i+1} , including the saved cycle time, $a(n)$ and sequence number n , corresponding to the previously transmitted synchronization frame, F_i ; means for computing a cycle time value difference, $a(n)-b(n)$ at each non-master node; and means for adjusting the local time base of each non-master node in accordance with the computed time difference). Pavon does not expressly disclose the master has a transmission management table. Aiello discloses synchronization between master and slave nodes and among devices wherein the master has a transmission management table, see in particular col. 10,

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lines 42-47, wherein a master table is utilized for the purpose of maintaining and tracking the state of each slave.

Regarding claim 2, Pavon discloses wherein as the detecting section of the synchronization point, the master determines an arbitrary base cycle as a synchronization point, and transmits instruction data to each slave based on the base cycle (¶0027, to perform clock synchronization in network 10, timestamp values are generated from a node arbitrarily designated as a master in the network 10 wherein the node 16a is arbitrarily selected as the master clock master node to which every other non-master node (slave node) in the network is synchronized), and each of the slaves corrects a current value of the base cycle counter based on the base cycle counter value assumed when the instruction data is received and the pre-allocated base cycle counter value assumed when the instruction data is received, and detects a time as a synchronization point when the count value reaches a predetermined value (¶0034, wherein the sequence number, n_i , transmitted within the synchronization frame is used to associate cycle time values, saved in the non-master nodes, with the corresponding synchronization frame that originated the saved cycle time values wherein the sequence number, n_i , is a unique number generated by the transmitter of a frame that is used in the non-master nodes to compare the $a(n_i)$ values with their corresponding $b(n_i)$ values; ¶0036, wherein the value of $a(n_i)$ stored at the master node 16a is adjusted for this delay as follows: $a(n_i) = \text{cycle_time}_{(\text{at observed PHY-TXEND.confirm}) - \text{offset}}$; ¶0040, wherein the value of $b(n_i)$ stored at the master node 16a is adjusted for this delay as follows: $b(n_i) = \text{CYCLE_TIME}_{(\text{at observed PHY-RXEND.indication}) - \text{offset}}$; ¶0042, wherein at the non-master

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node 18a, a processor associated with the non-master node 18a computes a cycle time difference value: $a(n_{i-1}) - b(n_{i-1})$.

Regarding claim 3, Pavon discloses The master/slave synchronization communication system according to claim 1, wherein as the detecting section of the synchronization point, the master determines an arbitrary base cycle as a synchronization point, and writes CYCLE_TIME register value as the next synchronization point in the instruction data when the master transmits instruction data to each slave based on the base cycle (¶0016, clock synchronization of clock registers of nodes includes transmitting from a master node in the network to a plurality of non-master nodes in the network, a first synchronization frame F_i at near-periodic intervals; storing a current cycle time value, $a(n)$, at the master node corresponding to the end of the synchronization frame ; upon receiving the first synchronization frame F_i , storing, at each of the non-master nodes, the locally generated current cycle time value, $b(n)$; transmitting, from the master node, a second synchronization frame F_{i+1} including the cycle time $a(n)$ and the sequence number n corresponding to the first synchronization frame), and each of the slaves corrects a current value of the base cycle counter value based on the CYCLE_TIME register value as the next synchronization point in the instruction data assumed when the instruction data is received and the current register value of its own CYCLE_TIME register value, and detects a time as a synchronization point when the count value reaches a predetermined value (¶0016, upon receiving the second synchronization frame F_{i+1} , at each of the non-master nodes, computing a cycle time difference value, $a(n) - b(n)$, at each of the non-master nodes; and adjusting

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the local time base at each of the non-master nodes in accordance with the computed cycle time difference value).

Regarding claim 4, The master/slave synchronization communication system according to claim 1, wherein as the detecting section of the synchronization point, the master determines an arbitrary base cycle as a synchronization point, sets the base cycle counter value to a predetermined value, and transmits the present base cycle counter value to each slave when the master transmits an instruction to the each slave, and each of the slaves sets the base cycle counter value to its own base cycle counter, and detects a time as a synchronization point when the count value reaches a predetermined value ¶0016, clock synchronization of clock registers of nodes includes transmitting from a master node in the network to a plurality of non-master nodes in the network, a first synchronization frame F_i at near-periodic intervals; storing a current cycle time value, $a(n)$, at the master node corresponding to the end of the synchronization frame ; upon receiving the first synchronization frame F_i , storing, at each of the non-master nodes, the locally generated current cycle time value, $b(n)$; transmitting, from the master node, a second synchronization frame F_{i+1} including the cycle time $a(n)$ and the sequence number n corresponding to the first synchronization frame; ¶0016, upon receiving the second synchronization frame F_{i+1} , at each of the non-master nodes, computing a cycle time difference value, $a(n)-b(n)$, at each of the non-master nodes; and adjusting the local time base at each of the non-master nodes in accordance with the computed cycle time difference value ¶0028, the master node 16a and non-master node 18a include internal 24.576 MHz clocks (oscillators) 16c and 18c

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and associated cycle time registers 16d and 18d wherein the 24.576 clocks 16c, 18c run freely and update the contents of the associated cycle time registers 16d, 18d and the cycle time registers 16d, 18d provide fields that specify the current time value and a write to the cycle time register initializes the clock hardware to the value contained in the write transaction).

Regarding claim 5, Pavon discloses master/slave synchronization communication system according to claim 1, wherein as the detecting section of the synchronization point, the master detects a synchronization point based on CYCLE_TIME register value, and simultaneously sets the base cycle counter value to a predetermined value, and each of the slave detects a synchronization point based on the CYCLE_TIME register value by way of the same way as the master, and simultaneously sets the base cycle counter value to a predetermined value (¶0028, the master node 16a and non-master node 18a include internal 24.576 MHz clocks (oscillators) 16c and 18c and associated cycle time registers 16d and 18d wherein the 24.576 clocks 16c, 18c run freely and update the contents of the associated cycle time registers 16d, 18d and the cycle time registers 16d, 18d provide fields that specify the current time value and a write to the cycle time register initializes the clock hardware to the value contained in the write transaction).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sato; Takashi (US 6128318 A1), Domon, Wataru (US

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20030014679 A1), Rietschel; Johannes et al. (US 20060013208 A1), Crocker; Daniel W. et al. (US 7065779 B1), CHAPMAN J T et al. (US 7065779 B1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAXWELL A. CLARK whose telephone number is (571) 270-1956. The examiner can normally be reached on Monday to Thursday 7:30A.M. through 5:00P.M. Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yao B. Kwang can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 5, 2008

/Maxwell A. Clark/
Examiner, Art Unit 2416

/Kwang B. Yao/
Supervisory Patent Examiner, Art Unit 2416